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ABSTRACT

This report, mandated by the Education Amendments of 1976, presents information on the demand for and availability of qualified teachers and administrative personnel and relates these findings to Office of Education (OE) teacher training programs. Two sample surveys provide data for this report: the Survey of Recent College Graduates (RCGS) conducted in spring 1976 of 1974-75 graduates and the Local Education Agency (LEA) survey of Teacher and Administrator Shortages conducted in fall 1977. The RCGS collected data on teacher supply (number of graduates newly qualified to teach, by field), and on teacher demand (number hired as teachers) from a sample of about 5,000 graduates of 209 colleges and universities. The LEAs collected data on teacher and administrator shortages (number sought but not hired because qualified candidates were unavailable) and on fields for which there is expected to be an emerging or growing demand for teachers or administrators from a sample of about 500 school districts. Appendix A presents additional detailed information on the OE teacher training programs. Appendix B contains descriptions of the surveys and estimates of sampling errors. (Author/ML F)

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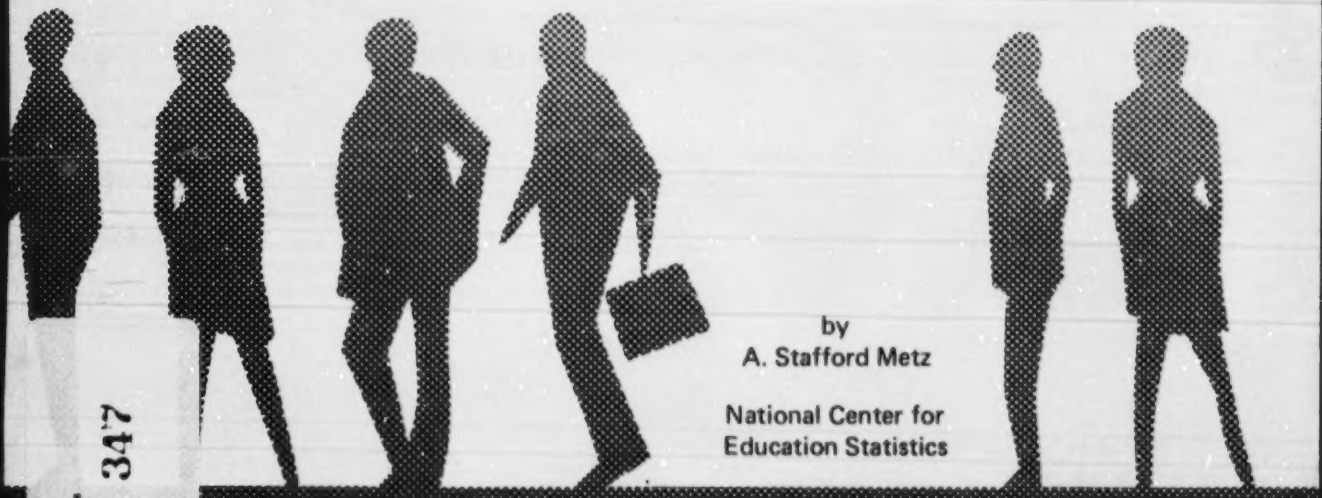

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EA 011 347

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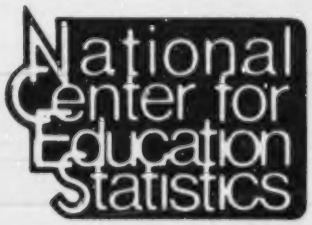

NATIONAL CENTER FOR EDUCATION STATISTICS

"The purpose of the Center shall be to collect and disseminate statistics and other data related to education in the United States and in other nations. The Center shall . . . collect, collate, and, from time to time, report full and complete statistics on the conditions of education in the United States; conduct and publish reports on specialized analyses of the meaning and significance of such statistics; . . . and review and report on education activities in foreign countries."–Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e-1).

FOREWORD

This report presents information on the demand for and availability of qualified teachers and administrative personnel as required by section 406(b) (5) of the General Education Provisions Act. Specifically, the legislation calls for the National Center for Education Statistics to:

> "conduct a continuing survey of institutions of higher education and local educational agencies to determine the demand for, and the availability of, qualified teachers and administrative personnel, especially in critical areas within education which are developing or are likely to develop, and assess the extent to which programs administered in the Education Division are helping to meet the needs identified as a result of such continuing survey."

Two sample surveys conducted by the National Center for Education Statistics (NCES) provide data for this report: the Survey of Recent College Graduates (RCGS) conducted in spring 1976 of 1974-75 graduates and the LEA (Local Education Agency) Survey of Teacher and Administrator Shortages (LEAS) conducted in fall 1977. These will be continuing surveys as called for by the legislation. The RCGS collected data on teacher supply (number of graduates newly qualified to teach, by field), and on teacher demand (number hired as teachers) from a sample of about 5,000 graduates of 209 colleges and universities. The LEAS collected data on teacher and administrator shortages (number sought but not hired because qualified candidates were unavailable) and on fields for which there is expected to be an emerging or growing demand for teachers or administrators from a sample of about 500 school districts. Estimates of the total teacher demand over the period 1961-1986 come from the NCES Projections of Education Statistics series. Data on total teacher supply between 1961 and 1972 come from data collected by the National Education Association, and between 1973 and 1976 from the Survey of Preservice Preparation of Teachers, a 1976 NCES sample survey of about 240 institutions of higher education with teacher training programs.

Readers should note that most of the data reported here are estimates based on sample surveys and are thus subject to sampling errors. Appendix B contains descriptions of the surveys and estimates of sampling errors.

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The development and preparation of the report was the responsibility of A. Stafford Metz, Chief, Population Surveys Branch. The section on Education Division teacher training programs was prepared by Charles H. Hammer who conducted the study of the training programs. Data from the Recent College Graduate Survey were prepared with the assistance of Mark E. Borinsky, project officer for that survey. Data from the LEA survey of Teacher and Administrator Shortages were prepared in cooperation with Jeanette M. Goor, project officer for the Fast Response Survey System.

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The cooperation of the U.S. Office of Education (OE) teacher training program personnel in providing material for this report is appreciated. In particular, the following individuals coordinated the collection of information from their bureaus and offices and reviewed those portions of the report dealing with their agencies' programs: Gail Beaumont, Office of the Gifted and Talented; Paquita Biascoechea, Office of Bilingual Education; Caroline Gillen, Teacher Corps; James Siantz, Bureau of Education for the Handicapped; and Muriel Tapman, Bureau of Occupational and Adult Education.

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SUMMARY OF FINDINGS

1975-76 supply-demand situation

- Between July 1974 and June 1975 an estimated 261,000 college graduates with bachelor's and master's degrees became eligible to teach for the first time (227,000 bachelor's and 34,000 master's recipients). This represented 21 percent of all graduates (24 percent of bachelor's and 12 percent of master's recipients). The number of new graduates eligible to teach also represents 11 percent of the 2,448,000 elementary and secondary school teacher work force in fall 1975. About 60,000 (23 percent) of these newly qualified teachers had not applied for a teaching job within about 1 year after graduation.

- Only 54 percent (109,000) of the estimated 201,000 newly qualified teachers who had applied for teaching jobs obtained full-time teaching positions for the following school year (1975-76). Thus, about 92,000 newly qualified teachers applied for but did not get full-time teaching jobs.

Surpluses and shortages by level and field

- A higher proportion of newly qualified elementary teachers with bachelor's degrees (59 percent) than of secondary school teachers (47 percent) who applied for teaching positions got full-time teaching jobs.

- In no instructional field did as many as 90 percent of the applicants in the 1975-76 school year get full-time teaching jobs. A supply-demand balance is assumed to exist when about 90 percent of the applicants get full-time teaching positions. The field of teaching the mentally retarded was highest, with 80 percent of the applicants obtaining full-time teaching jobs. Special education (all areas combined) was second highest, with nearly 70 percent of the applicants getting full-time jobs. The next highest were vocational education (all areas combined), physical education, and hearing and speech--all between 62 and 64 percent. No other fields were estimated to be as high as 60 percent.

- In fall 1977 there was a total of about 9,200 positions in school districts for which teachers were sought but were unable to be hired because qualified candidates were unavailable (local shortages), despite an estimated national surplus of 80,000 to 90,000 beginning teachers at that time.

- Local shortages of 3,200 special education teachers were indicated, including an estimated 1,500 teachers of the learning disabled. School districts also estimated local shortages of about 1,200 mathematics teachers and 1,200 bilingual education teachers. The areas of teaching speech impaired and mentally retarded pupils were estimated to have about 500-600 positions for which qualified persons were unable to be hired.

Employment status of newly qualified teachers compared to graduates in other fields

- In spite of the unfavorable job outlook for newly qualified teachers in 1975-76, they were at least as successful in seeking jobs as were persons trained in most other fields. Unemployment for teacher graduates was 5 percent; for all other graduates, 8 percent. Underemployment for newly qualified teachers was 18 percent; for all other graduates, 26 percent.

- A larger proportion of newly qualified teachers (education majors) than of other graduates reported that they had jobs closely related to their fields of training--63 percent, as compared to 51 percent.

- The average salary for bachelor's degree recipients working as beginning teachers was $8,300 per year, while recent graduates in other professions earned an average of $10,100 per year. But teachers, unlike other workers, generally have 9-10 month contracts.

Fields for which teacher demand is expected to increase during the next 5 years

- According to school district reports, the teaching of learning-disabled pupils is expected to be the leading area of increasing teacher demand over the next 5 years (an estimated 1,200 districts). Gifted and talented, industrial arts, mathematics, natural and physical sciences and agriculture were the next most frequently mentioned fields (600 to 900 districts).

Outlook for teacher availability and demand

- Elementary and secondary school enrollments have recently been declining and are expected to continue declining until about 1982. They are projected to level off at this time and then begin to increase in 1983 and continue to do so at least through 1986.

- Demand for teachers to a large extent is based on enrollment. Therefore, teacher demand has also been decreasing but is projected to increase during the first half of the 1980's.

- The supply of beginning teachers has been decreasing rapidly since 1973 in response to the decrease in demand. This response represents a lag of about 4 years from the time when demand began to decrease in 1969. This decrease in supply is expected to continue until at least 1979 or 1980, after which it is uncertain what will happen.

- Surpluses in the vicinity of 80,000 to 90,000 newly qualified teachers will most likely continue into the early 1980's and possibly beyond, depending on the sensitivity of response of teacher supply to the projected upturn in teacher demand in 1980.

Teacher reserve supply

- The teacher reserve pool, defined here as persons qualified to teach who are not teaching and who are seeking teaching jobs (excluding newly qualified teachers), is estimated to be between 150,000 and 200,000 teachers, as of 1976. A reserve supply of about this magnitude will continue for the next few years as the expected large numbers of new teacher graduates who cannot find teaching jobs enter the reserve pool.

Administrators

- Qualified persons were hired for an estimated 12,000 position openings for educational administrators in fall 1977. About 6,400 (53 percent) of the administrators hired were new administrators (not employed as administrators the previous year), which represents the demand for new administrators.

- Although the supply of teachers eligible to be administrators is not known, it was clear when shortages of administrators in school districts were examined, that school districts in nearly all cases were able to find qualified candidates to fill position openings. Nationally, only an estimated 200 positions could not be filled with qualified persons. It is safe to conclude that there are no areas where shortages of educational administrators exist to any appreciable extent.

Education Division teacher training programs

- The major teacher training programs in the Education Division are administered by the following bureaus/offices:

  Bureau of Education for the Handicapped
  Bureau of Occupational and Adult Education (Vocational Education)
  Office of Bilingual Education
  Office of Gifted and Talented
  Teacher Corps.

- These programs primarily support inservice training and retraining for individuals previously qualified to teach.

CONCLUSIONS

- Currently a surplus estimated to be between 80,000 and 90,000 newly qualified teachers exists, plus a surplus of at least an additional 150,000-200,000 teachers in the reserve pool (persons eligible to teach and not teaching, but attempting to get a teaching job). This surplus will continue for at least the next 2 to 3 years.

- Special education teachers are approaching a supply-demand balance, with an estimated 70 percent of newly qualified applicants getting full-time teaching jobs for the 1975-76 school year and 3,200 local shortages estimated in this area for fall 1977.

- There is currently, and will continue to be, a demand for teachers of the learning disabled. This area was the one most frequently mentioned by school districts as having shortages (an estimated 1,500 districts), and was also the area most frequently mentioned by school districts for which demand is likely to increase over the next 5 years.

- Persons newly qualified to teach fare at least as well on the job market as do college graduates in other fields in terms of unemployment, underemployment, salary level, and getting a job closely related to their field of study. Therefore, a person desiring a college education should not necessarily be discouraged from receiving training in education, since employment prospects are at least as bright as in most other fields.

- It is probable that the supply-demand situation will change, beginning in the early 1980's. At that time teacher demand is projected to increase in response to the expected rise in enrollments. As this occurs teacher turnover may also rise, adding to the demand figure. It is unclear, however, what will happen in the case of the supply of newly qualified teachers. If the supply of newly trained teachers begins to increase in 1980 or 1981 in response to the likely increase in demand at about that time, then a surplus of teachers will continue. If the supply continues to decrease until 1980 and does not increase by the mid-eighties, however, shortages of newly qualified teachers would be expected to occur. Careful attention needs to be paid to this situation,

primarily in the form of monitoring the magnitude of the supply of beginning teachers and the teacher-turnover rate to determine whether there will be a continued surplus or whether a shortage of teachers will occur in the latter 1980's.

- It is expected that demand for teachers at the elementary level will increase before it will at the secondary level because enrollment increases are projected to occur there first. This is combined with the fact that beginning elementary teachers now fare better in getting teaching jobs than do secondary teachers. Job prospects, therefore, should be considerably better for elementary than for secondary teachers for several years after 1980.

- If a shortage of newly qualified teachers occurs in the mid-eighties, teachers in the "reserve pool" probably will be available to fill many of the openings for several years after the shortage period begins.

- Since the major teacher training programs in the Education Division are primarily involved in inservice training and retraining, they do not contribute significantly to the surplus of newly qualified teachers.

RECOMMENDATIONS OF THE ADVISORY COUNCIL ON EDUCATION STATISTICS

After reviewing the findings of the report, the Advisory Council on Education Statistics recommended:

- No specific action be taken at this time which would affect the teacher supply-demand situation since there is currently a large surplus of teachers and no clear-cut shortages in any individual field of instruction.

- No modification of existing Federal programs is necessary since Education Division teacher training programs are not contributing to the surplus.

- That additional studies being conducted under this mandate focus on the early 1980's so that anticipated changes in the supply-demand situation can be readily detected.

- Wide and timely dissemination of the results of these supply-demand studies so that the teacher market can respond to changing conditions.

BACKGROUND

The Education Amendments of 1976 (P.L. 94-482), enacted into law in November 1976, directed the National Center for Education Statistics (NCES) to:

> Conduct a continuing survey of institutions of higher education and local educational agencies to determine the demand for, and the availability of, qualified teachers and administrative personnel, especially in critical areas within education which are developing or are likely to develop, and assess the extent to which programs administered in the Education Division are helping to meet the needs identified as result of such continuing survey.

It also mandated a report that:

> clearly sets forth areas of critical need for additional qualified education personnel in local education agencies and, after discussion and review by the Advisory Council on Education Statistics, identifies priorities within projected areas of need, and includes recommendations of the Council with respect to the most effective manner in which the Nation and the Federal Government may address such needs.

This report gives the findings of the surveys conducted in response to this mandate and relates these findings to Education Division programs that are training persons to become teachers.

A shortage of teachers existed during much of the 1950's and 60's. During this period enrollments continuously increased and teacher demand followed the enrollment trend. The number of teachers produced did not approach the level of demand until about 1967-68. A general surplus of teachers then began to occur in 1969. The surplus was brought about by changing trends in enrollments, which leveled off at this time and began to decrease in 1971 (causing a decrease in the demand for teachers) while the number of new teachers being prepared continued to rise through 1973. Since 1973, teacher production has also been declining rapidly in response to the decrease in demand. It is apparent that there was a lag of about 4 years in the response of the teacher supply to the changed demand situation. Since 1973, both teacher production and teacher demand have been decreasing; but the supply of newly qualified teachers has continued to exceed demand to about the same extent each year since 1973, creating continued surpluses of newly qualified teachers.

TEACHER SUPPLY AND DEMAND AS OF 1975-76

In response to the mandate in P.L. 94-482 to determine the demand and availability of qualified teachers, data are presented on this topic from the Recent College Graduate Survey (RCGS) conducted in spring 1976. The tabulation below and reference table 1, p. 43, present data on bachelor's and master's degree recipients newly qualified to teach, the number who applied for teaching jobs, and the number who got full-time teaching jobs.

Teaching status	Number	Percent
Eligible to teach for the first time...	261,000	-
Did not apply for teaching job.....	60,000	-
Applied for teaching job.....	201,000	100
Teaching full time.....	109,000	54
Teaching part time.....	20,000	10
Not teaching.....	72,000	36

Approximately 261,000 students were graduated from colleges and universities with bachelor's and master's degrees during the period July 1, 1974, to June 30, 1975, who were qualified to teach for the first time (227,000 bachelor's and 34,000 master's degree recipients).[1/] This number is equivalent to about one-tenth of the total of 2,448,000 employed teachers in fall 1975. The total number of graduates qualified to teach represented

1/ The Higher Education General Information Survey, conducted by NCES, reported 168,749 graduates with majors in education who received bachelor's degrees for the 1974-75 period. This number does not include graduates with majors in other fields, such as mathematics and English, who are eligible to teach and who are prepared primarily for instruction at the secondary school level. The Recent College Graduate Survey figure of 227,000 graduates with bachelor's degrees who were eligible to teach includes graduates eligible to teach regardless of major.

about 21 percent of all graduates (24 percent of bachelor's and 12 percent of master's recipients).2/ Of the total qualified to teach, an estimated 201,000 applied for teaching jobs. This left about 60,000 (23 percent of teacher graduates) who did not apply for a teaching job within a year after becoming eligible to teach. Of those applying, 109,000 (54 percent), were working in spring 1976 as full-time teachers and 20,000 (10 percent) as part-time teachers.

Master's degree recipients, newly eligible to teach, fared better than did bachelor's degree recipients in getting full-time teaching jobs--67 percent, compared to 53 percent.

Considering the number who applied (201,000) as the effective supply of newly qualified teachers and the number working full time (109,000) as the effective demand for newly qualified teachers,3/ there was an overall surplus for the 1975-76 school year of about 92,000 newly qualified teachers (8,000 master's and 84,000 bachelor's).4/

This surplus condition is not likely to improve within the next few years. Although the annual supply of new teacher graduates has decreased rapidly since 1973 and is estimated to continue to do so until 1979 or 1980, demand is also predicted to fall at about the same rate during the last years of the 1970's (see chart 1).

2/ There was a total of 932,000 bachelor's and a total of 294,000 master's degree recipients in spring 1975.

3/ In this report, when examining surpluses and shortages of teachers, the supply of teachers will be related to the demand for teachers rather than to the need for teachers. Demand is used in the administrative sense, i.e., in terms of teaching positions which are budgeted for schools and school systems. The concept of need, on the other hand, involves how many and what type of teaching positions should be budgeted to provide quality instruction to all pupils. There are many points of view concerning what pupil-teacher ratios, teacher-other professional staff ratios, and other components of instructional delivery should be, particularly in the more complex instructional areas of education for the handicapped and bilingual education. Rather than to attempt to resolve the many issues involved in the concept of need for teachers, this initial report will be limited to an analysis of demand in relation to supply.

4/ The National Education Association estimated a similar surplus of 91,000 newly qualified teachers for the 1975-76 school year. William S. Graybeal, Teacher Supply and Demand in Public Schools, 1975, National Education Association, Research Memo 1976-2, June 1976.

Several questions need to be considered in relation to the current overall teacher surplus:

1. Are there now shortages for any teaching levels or fields despite the general surplus?

2. Do graduates who are trained as teachers fare worse in terms of employment status than do graduates trained in other fields?

3. Are there any fields emerging or developing where increased demand for teachers is likely to occur in the next 5 years?

4. Will the employment prospects for teachers remain the same or improve by the early to mid-eighties?

5. What is the estimated teacher reserve supply, and how is that supply expected to impact on the situation?

6. What do the present and projected prospects for teachers mean for federally supported teacher training programs?

AREAS OF TEACHER SURPLUSES AND SHORTAGES

Proportion of College Graduates Obtaining Employment in their Teaching Fields

Data from the Recent College Graduate Survey (RCGS) show that persons eligible to teach at the elementary level who applied for a teaching job fared better in getting a full-time teaching job (59 percent) than did those eligible to teach in a field of secondary education (47 percent). Those eligible at both the elementary and secondary levels were in an intermediate position (55 percent). The surplus of newly qualified teachers is, therefore, larger at the secondary level.

Several individual fields have been reported by earlier studies to be areas of particular surplus, notably English and social science. Other fields have been reported to be in or near short supply, e.g., mathematics, industrial arts, vocational, and special education.5/

The data presented below from the RCGS give the proportion of newly qualified graduates for selected fields applying for teaching jobs who were employed as full-time teachers.

These findings, and data in reference table 2, p. 44, show a pattern similar to that reported in other studies. Newly qualified teachers in social science (36 percent of the applicants hired), art (32 percent), and English (46 percent) were estimated to have the most difficulty in finding full-time teaching jobs. Physical education (62 percent) and vocational education (64 percent) were fields of greater relative strength, although still experiencing surpluses.

Teachers of the mentally retarded had the highest proportion hired full time as teachers (80 percent). Teachers in all special education fields combined found full-time jobs at a rate of 70 percent.6/ Considering that even

5/ See, Supply and Demand Conditions for Teachers and Implications for Federal Programs, U.S. General Accounting Office, 1974, and William S. Graybeal, Teacher Supply and Demand in Public Schools, National Education Association.

6/ In the case of special educaton, persons hired as speech therapists or audiologists were considered equivalent to teachers.

Field	Percent of bachelor's degree recipients eligible to teach who applied and who got full-time teaching jobs
Mentally retarded.....	80
Special education (all fields combined).....	70
Vocational education (all fields combined).....	64
Physical education.....	62
Hearing and speech.....	61
English.....	46
Social science.....	36
Art.....	32

under very favorable conditions not all applicants will find jobs in their fields because of geographic and other considerations, special education may be approaching a balanced supply-demand market situation.7/

Fields for Which School Districts Report Shortages

The Recent College Graduate Survey provided information on the numbers of persons trained as teachers who were hired. This only indicates a relative degree of surplus. Theoretically, if all or nearly all beginning teachers in a field were hired, it would not be clear whether this represented a balance or an actual shortage situation. On a national basis there were no fields other than special education for which nearly all teachers were hired. Are there any fields where, on a school district basis, actual shortages are now experienced? To answer this question, local education agencies were surveyed in fall 1977 to determine if they had position openings in any fields and, if so, what shortages were experienced when they attempted to fill these positions.8/

7/ It should be noted that, with the exception of the special education field, the standard errors on the figures cited in the above table are relatively large (see appendix B, p. 65). Therefore, caution should be used in drawing conclusions about the relative rankings of the percentages for the various fields.

8/ Data from the LEA Survey of Teacher and Administrator Shortages, National Center for Education Statistics, Fall 1977.

Specifically they were asked to indicate the number of position openings (by field) for which teachers were sought but not hired because qualified candidates were unavailable.

Although an estimated 85 percent of all 15,344 districts had at least one position opening in fall 1977, the large majority of the reporting districts had no shortages in any field, indicating that they were able to fill all their position openings with qualified personnel. Some districts, however, did report shortages; an estimated 3,000 districts (23 percent of districts with openings) had at least one position each for which they were unable to hire a qualified person.

The number of shortages by field with 400 or more were estimated as follows:

Field	Number of teacher shortages experienced by school districts
Special education.....	3,200
learning disabled.....	1,500
speech impaired.....	600
mentally retarded.....	500
other special education fields..	600
Bilingual education.....	1,200
Mathematics.....	1,100
Natural and physical sciences.....	400
Reading.....	400

A total of 9,200 local shortages (reference table 3, p.45) was estimated for fall 1977, as compared to the overall surplus of 80,000 to 90,000 newly qualified teachers estimated for the same period. About 3,200 of the positions not successfully filled were reported in the combined fields of special education (learning disabled, mentally retarded, emotionally disturbed, and speech impaired). Learning disabled was the individual instructional area where local shortages were most frequently reported (1,500).

Local shortages were estimated to be disproportionately high in the Southeast as compared to the other regions. Thirty-nine percent of districts in the Southeast reported at least one shortage, compared to about 20 percent of districts in the West, Southwest, the Great Lakes, and Plains regions; only about 5 percent in the North Atlantic region.

On a school district basis, therefore, some shortages were reported. It is likely, however, that on a national basis there were more than enough qualified persons who were available in nearly all of these fields to fill the positions, but who either did not know about these job openings or found them to be unacceptable for some reason.

One exception was special education. This appeared to be an area where overall demand either equaled or approached the level of supply of newly qualified teachers. Data from the Recent College Graduate Survey, presented previously, indicated that there was not a large surplus of newly qualified special education teachers; an estimated 70 percent of bachelor's degree recipients eligible to teach in special education who applied had obtained full-time teaching jobs. The LEA survey indicated 3,200 school district shortages for special education in fall 1977. Although the size of the national surplus in fall 1977, if any, of newly qualified special education teachers is not known; in fall 1975 it was estimated to be about 6,000. The situation in special education is currently in flux. As a result of earlier reports of shortages in special education, more people have been training in this area,9/ tending to reduce the shortage. On the other hand, the impact of the Education for All Handicapped Children Act (P.L. 94-142) is expected to increase the demand for special education teachers.

The LEA survey also identified teaching of the learning disabled as the area of special education where the greatest demand exists. An estimated 4,800 districts had position openings for teachers of the learning disabled, and 1,500 of those positions could not be successfully filled. Relatively few districts, however, reported openings for teachers involved primarily with teaching the severely handicapped (700), and relatively few (200) teacher shortages were experienced in this area. This is the case, despite the fact that one of the emphases of the Education for All Handicapped Childrens Act is that of identifying and providing appropriate education for all severely handicapped children. As of fall 1977, school districts apparently had not begun a major effort to increase their staff in this area.

9/ Finding from the Survey of Preservice Preparation of Teachers, conducted by the National Center for Education Statistics. See The Condition of Education, 1977. The National Center for Education Statistics, Chart 2.10, p. 37.

EMPLOYMENT STATUS OF NEWLY QUALIFIED TEACHERS COMPARED TO GRADUATES IN OTHER FIELDS

The job market for newly qualified teachers has been shown to be discouraging; only 53 percent of the bachelor's level, beginning teacher applicants in 1975-76 found full-time teaching jobs. Would such persons be better off if they had been trained in some other field? Should college students be discouraged from entering teaching? What other fields, if any, offer better opportunities? Some information regarding these questions is available from the Recent College Graduate Survey. Bachelor's degree recipients prepared to teach generally fared at least as well in job seeking as did those in other fields. Comparisons between graduates eligible to teach and all other graduates are as follows:

Employment and salary status	Bachelor's degree recipients	
	Teachers	All other graduates
Unemployment rate.....	5	8
Labor force participation rate....	91	84
Underemployment rate.....	18	26
Job rate in same or closely related field.....	63	48
Average annual salary.....	1/$8,300	2/$10,100

1/ Teachers usually have 9-10 month contracts. Average annual salary is only for those employed as teachers.

2/ Average salary in professional level jobs other than teaching.

The unemployment10/ and underemployment11/ rates for bachelor's prepared

10/ Unemployed persons are those who, during the survey week, had no employment but were available for work and had engaged in job-seeking activities within the past 4 weeks.

11/ Underemployed college graduates are defined as those not working in professional, technical, managerial, or administrative types of jobs and who report that, in their opinion, their jobs do not require a college degree.

to teach are both seen to be lower than for all other bachelor's graduates and the labor force participation rate (percent in the labor force) is higher. Furthermore, a larger proportion of newly qualified teachers (education majors) than other graduates reported that they had jobs in or closely related to their fields.

The average salary for beginning teachers was $8,300 per year. This figure is lower than the average of $10,100 per year for bachelor's degree recipients working in other professional fields; but teachers, unlike other workers, generally have 9-10 month contracts.

If teachers were to be discouraged from entering teaching, what fields would they be better off preparing for? Only two fields--engineering and the health professions--offered clearly more favorable opportunities. Newly graduated engineers, on the average, received a salary of $13,400; very few (3 percent) were underemployed and 71 percent got jobs closely related to their fields of study. The average salary for bachelor's degree recipients in the health professions field was $10,600; their rate of underemployment was only 4 percent, and 91 percent obtained closely related jobs. These fields, however, would not provide opportunities for many teacher graduates. These fields absorb relatively small numbers of new graduates, each only 6 percent of bachelor's degree recipients. Any large shift of teacher trainees to these areas would rapidly produce surpluses in them, also.

FIELDS FOR WHICH TEACHER DEMAND IS EXPECTED TO EMERGE OR GROW OVER THE NEXT 5 YEARS

In order to obtain information in response to the legislative requirement to determine the "... demand for, and availability of, qualified teachers ... especially in critical areas within education that are developing or are likely to develop ..." school districts in the LEA survey were asked to indicate those instructional fields "... for which demand for personnel is likely to emerge or grow in your district within the next five years." On the basis of the responses, the numbers of districts estimated to be expecting increases in demand for teachers in selected fields are as follows:

Field	Number of districts expecting teacher demand in field to emerge or grow
Special education, all fields	2,800
Vocational education, all fields	1,500
Learning disabled	1,200
Gifted and talented	900
Industrial arts	800
Mathematics	700
Natural and physical sciences	700
Agriculture	600

Teachers of the learning disabled was the area mentioned by the largest number of districts, an estimated 1,200 of the 15,344 districts in the country. Gifted and talented and industrial arts were next, with 900 and 800 districts, respectively (reference table 4, p. 46).

It is clear that special education and particularly teachers of learning disabled pupils are considered areas of growing demand. This is undoubtedly a result, to a large extent, of the requirements placed on States and local education agencies by P.L. 94-142, the Education for All Handicapped Children Act. Mathematics and industrial arts are fields where shortages have been reported in the past few years and are expected to continue to be fields of high relative demand for the next 5 years. Gifted and talented, agriculture, and natural and physical science are fields not recently reported as in high demand. These fields should be observed to see if demand does increase and if finding staff becomes a problem for school districts.

OUTLOOK FOR TEACHER AVAILABILITY AND DEMAND

Will the general surplus of teachers continue into the mid 1980's? In answering this question, reference can first be made to projections of the demand for additional teachers (positions to be filled by teachers not teaching the previous year) that are prepared annually by the National Center for Education Statistics.12/ These projections show that the demand for additional teachers, which has been decreasing since 1970, is expected to continue declining through 1980 and then increase through 1986 -- essentially responding to the upturn in student enrollment in the early 1980's (chart 1a). See also reference table 5, p. 47).

The demand for additional teachers can usefully be separated into positions filled or expected to be filled by newly qualified teachers (chart 1b) and by teachers from the reserve pool.13/ In a supply-demand analysis directed toward gauging how many new teachers need to be trained, it is important to relate the number of new graduates qualified to teach (supply) with the number hired as teachers (demand). Data on the number of newly qualified teachers who are hired, however, have not been regularly and definitively collected. Using data from the National Education Association and the Recent College Graduate Survey, however, it is estimated that in 1970 new graduates made up about 75 percent of the demand for additional teachers; and by 1972 the figure had diminished to about 70 percent and has remained at about that magnitude. This relation between the demand for additional teachers and the demand for newly qualified teachers is illustrated in chart 1b.

A further consideration in estimating teacher demand is the teacher turnover rate (proportion of teachers who leave the profession in a given year). This determines the number of teachers needed for replacement. The turnover rate is estimated to have been 6 percent since 1971 and is expected to continue at this rate until 1981 (chart 1b). The turnover rate may well increase, however, about the time that demand for additional teachers begins to rise. Teachers may not feel as great a need to hold on to their present jobs as more teaching jobs become available. Therefore, allowance is also made in chart 1b for the possibility that starting in 1982 the teacher turnover rate will increase to 8 percent, the level of the 1960's. If this were to be the case, the demand for additional teachers would increase by nearly 40,000 teachers per year in the mid 1980's because of the 2-percent increment in the teacher turnover rate.

12/ The most recent projections are found in chapter IV, Instructional Staff, by Martin M. Frankel and Debra Gerald, in Projections of Education Statistics to 1986-87, National Center for Education Statistics.

13/ Comprised of persons trained and qualified to teach who are not teaching, and are seeking a teaching job (excluding newly qualified teachers).

CHART 1a. Public and nonpublic elementary and secondary school enrollments.

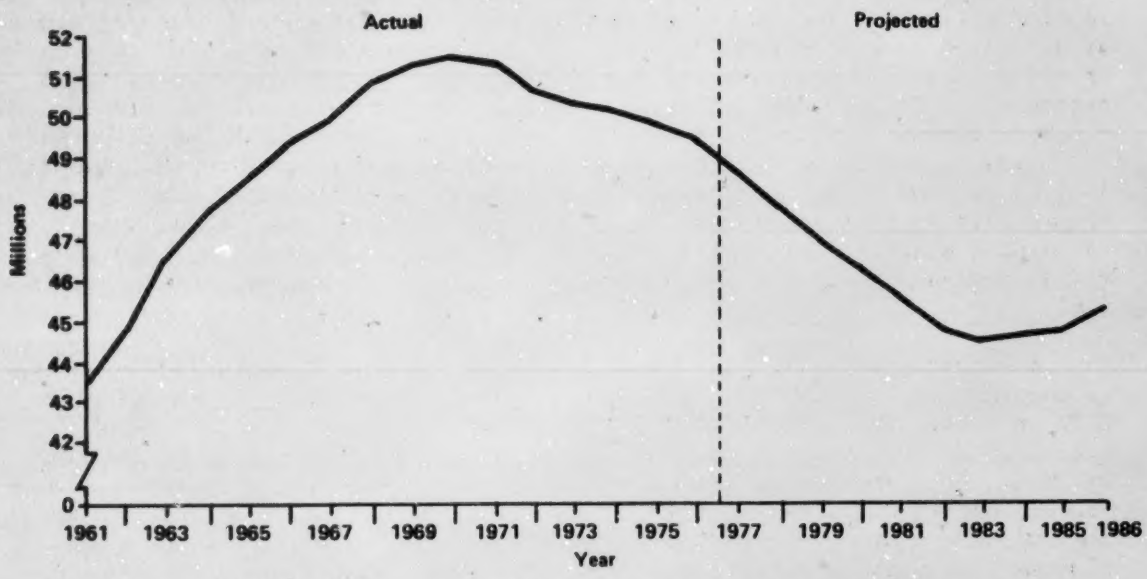
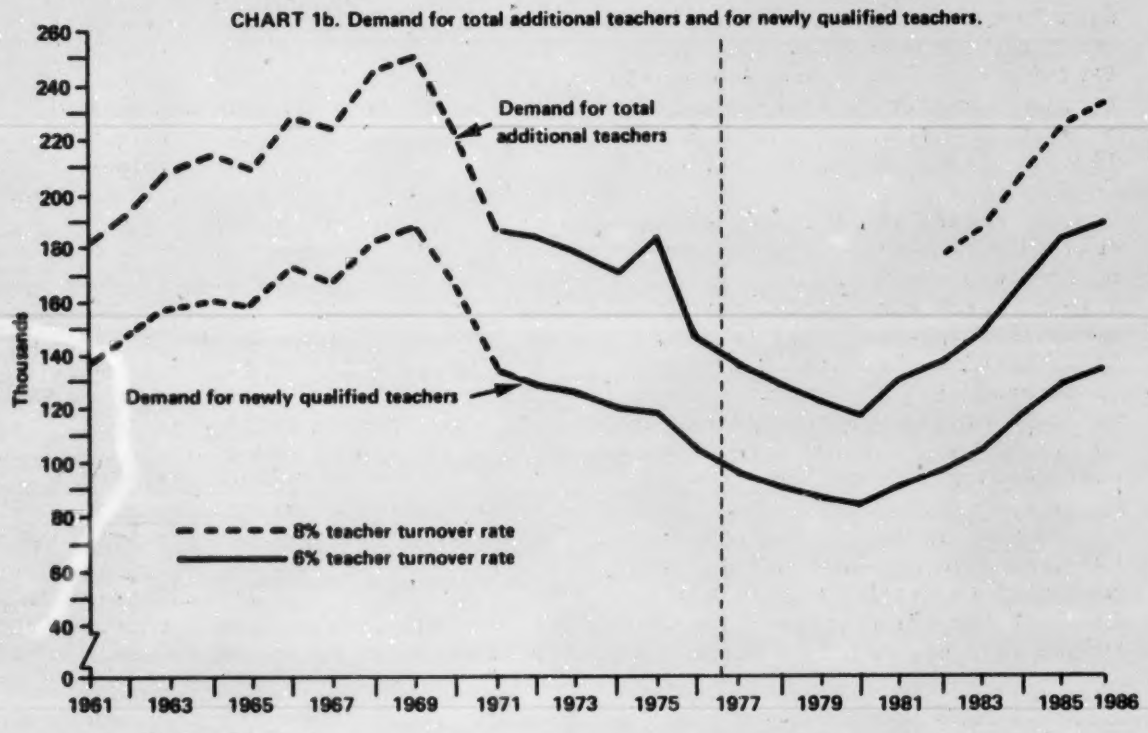


CHART 1b. Demand for total additional teachers and for newly qualified teachers.



See reference table 5

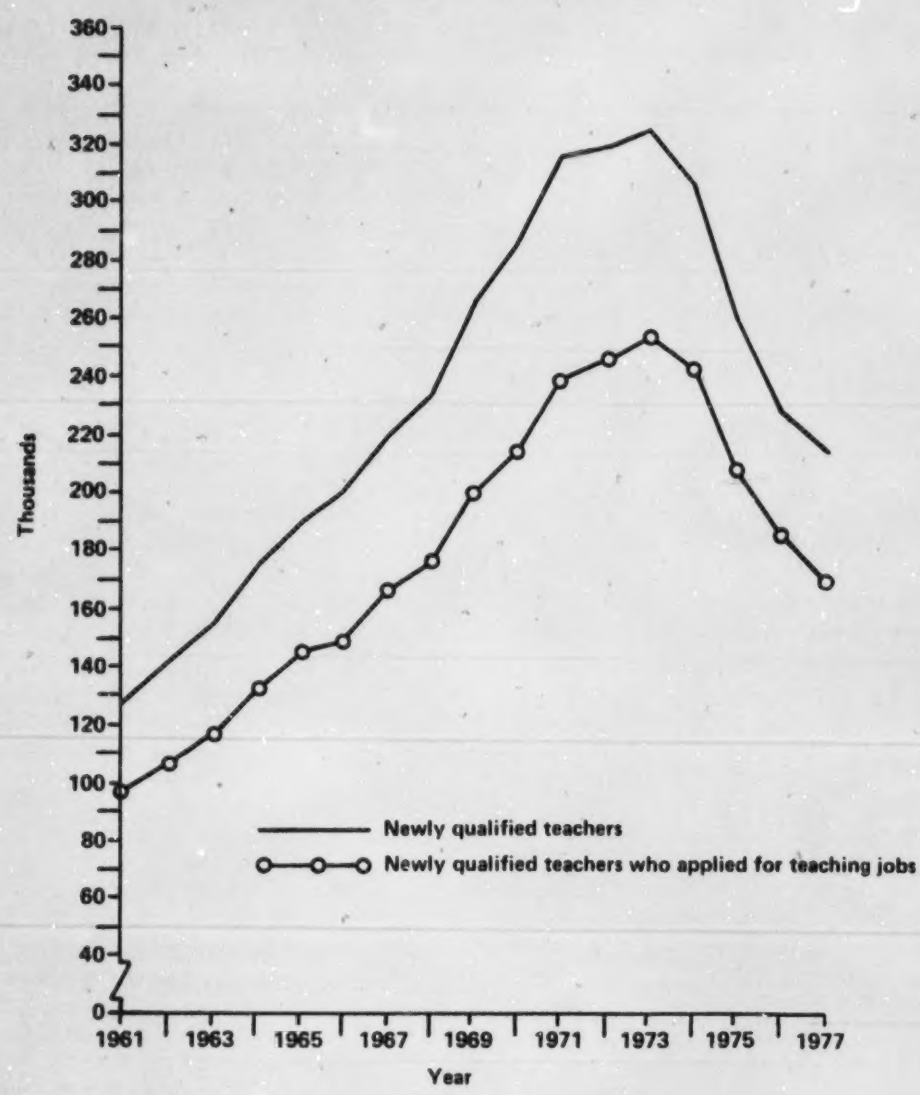
The outlook for the supply of newly trained teachers is more difficult to estimate than for the demand for additional teachers (charts 2 and 3). It was indicated that the number of teacher graduates has been decreasing since 1973. Since teacher demand is projected to decrease through 1980, the supply of newly qualified teachers can also be expected to continue decreasing in response to the decrease in demand to about this time. There is, however, no accurate technical means of estimating what will happen to the supply trend. Two possible trends will be considered, based on the assumption that supply will be responsive to the demand for newly qualified teachers. The first possibility is that supply will respond directly to demand. Thus, supply would also start to increase in 1980 and, under this assumption, surpluses would continue throughout the period of increasing demand projected through 1986.

A second possibility is that supply will lag 2 to 3 years in responding to the increase in demand. In this case supply would begin to increase in 1982 or 1983. This alternative is considered on the grounds that supply lagged by about 4 years in response to demand when demand began to decrease in 1969. It is reasoned, therefore, that it will also lag when demand turns upward, but that the lag will not be as long. This is because students will respond more rapidly when being attracted back into teaching by the prospect of more jobs being available than when they were "forced" away from teaching when fewer jobs became available. Under this possibility either relatively small surpluses will develop beginning in 1984 (2-year lag) or supply and demand will be about equal beginning in 1984 (3-year lag) if a 6-percent teacher turnover rate continues. Shortages of newly qualified teachers will only arise within the next 7-8 years if supply continues to decrease after 1984 or levels off about 1982 and then stays that way for several years.

As noted, there is no adequate method of projecting supply of newly qualified teachers. One attempted approach is to determine the proportion of freshmen whose probable career occupation is teaching and project this 4 years later when most freshmen will graduate. This approach tends to underestimate the actual outcome. A higher percentage of graduates end up going into teaching than freshmen's stated intentions would foretell. For example, 15 percent of 1971 freshmen indicated their intent to teach,14/ but 24 percent of bachelor's degree recipients in 1975 said they were qualified to teach; 19 percent applied for a teaching job for the 1975-76 school year. Also, a considerably higher rate of decrease was indicated by freshmen intention than actually occurred. Between 1970 and 1972, the decrease in the number of freshmen intending to teach was about 22 percent per year. Between 1974 and 1975 and also between 1976 and 1977, the actual decrease in number of graduates qualified to teach was only about 14 percent per year. The overall trend in freshmen intention to teach, however, may be indicative of what the trend in supply will be, and this shows a decrease in freshmen intention to teach until

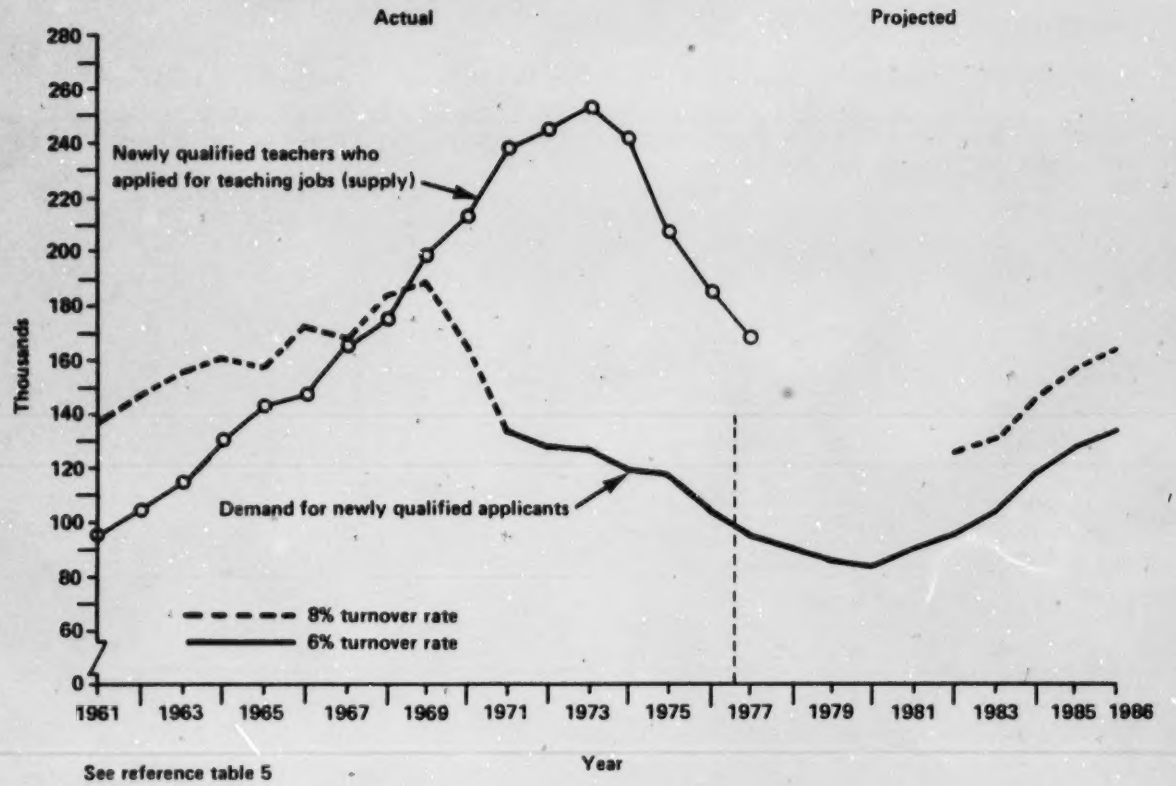
14/ Alexander W. Astin, et. al., The American Freshmen: National Norms for Fall 1971, American Council on Education.

CHART 2.—Supply of newly qualified teachers and newly qualified teachers who applied for teaching jobs.



See reference table 5

CHART 3.—Supply of newly qualified teachers who applied for teaching jobs and demand for newly qualified applicants.



See reference table 5

1975 and an increase beginning in 1976. If this is predictive of graduates, then the supply of newly qualified teachers should decrease through 1979 and begin to increase in 1980.

Perhaps the most important point to be made with regard to teacher supply is that it is important to monitor closely the trend in the supply of newly qualified teachers by attempting to get 1- or 2-year advanced estimates from teacher training institutions.

TEACHER RESERVE SUPPLY

The discussion of teacher supply until now has been limited to the supply of newly qualified teachers--those just graduating who are eligible to teach. A second aspect of teacher supply is the teacher reserve pool. In order to get a relatively precise estimate of the teacher reserve pool, an investment in a large household survey would be required, and this has not been considered worthwhile, particularly when a surplus of newly qualified teachers is known to exist. An attempt will be made, however, to provide a general estimate of the magnitude of the reserve pool for the school year 1975-76.

The reserve pool can be considered to consist of two parts--persons eligible to teach who have never taught (excluding newly qualified teachers) and persons who have taught before but who are not now teaching.

The reserve pool also can be defined as consisting of all those eligible to teach in these two groups or it can be restricted to only those actually seeking teaching jobs. In this report, only those seeking teaching jobs will be considered to be in the reserve pool at any given time. It should be understood that if the teacher labor market improves in the future, many persons may seek teaching jobs who are not doing so under the present conditions.

First, an estimate will be made of those persons making up the reserve pool who are eligible to teach but who have never taught. There were 261,000 persons who graduated from colleges and universities during 1974-75 who were eligible to teach for the first time. Of these, 109,000 had obtained full-time teaching jobs in the 1975-76 school year, leaving 152,000 qualified persons who were not teaching full-time in 1975-76. If about half of these had sought full-time teaching jobs for the school year 1976-77 then, in round numbers, 75,000 would be considered to have been in the reserve pool in 1975-76. There would also be some graduates eligible to teach during 1973-74 and earlier years, who had not gotten teaching jobs and had applied for 1976-77 school year job openings. If we assume the number of those persons to have been about 25,000 (the number may well have been as high as 50,000), then there would have been in 1975-76 100,000 qualified persons (including the 75,000 estimated above) in the reserve pool who had not taught full time before.

Estimating the number of persons in the reserve pool who are former teachers is even more difficult. This can be approached, however, by examining the number of persons in 1976 in the labor reserve15/ who had

15/ The labor reserve includes persons not in the labor force who were employed at some time during the past 10 years. The labor force includes persons who are either employed or unemployed.

taught before and then estimating the proportion of these seeking a teaching job the following year. The National Education Association (NEA)16/, using U.S. Bureau of the Census data, estimates the number of persons in the labor reserve who had taught before to have been 640,000 in 1976. In an attempt to determine the proportion of these persons who will seek a teaching job, NEA estimated for 1960 (a time of teacher shortage) what the proportion that persons hired from the reserve pool (reentering teachers) was of the total labor reserve at that time. This was determined to be 18.3 percent. Since it can be assumed that in a time of teacher shortage nearly all persons who want teaching jobs will be able to get them, the 18.3-percent figure (117,000 teachers) is considered to represent the proportion of persons in the labor reserve eligible to teach in 1976 who were seeking teaching jobs.

The 18.3-percent figure for 1960 (a time of teacher shortage) may not, however, apply to 1976 (a time of considerable teacher surplus). It may well be that a smaller percentage of persons were seeking teaching jobs under the less favorable conditions that prevailed in 1976. A more conservative figure would be 10 percent, which would indicate that 64,000 persons in the labor reserve were attempting to teach that year.

Combining the figure of 100,000 previously estimated for those who have not taught with the 10 percent figure for the teachers in the labor reserve gives an estimate of 164,000 for the teacher reserve pool for 1975-76. Using the NEA estimate of 18.3 percent for the labor reserve, the total would be 217,000.

It can be assumed that the number of teachers in the reserve pool will continue to be at least this large as long as the current surplus of newly qualified teachers exists, i.e., at least until the demand for teachers begins to increase in the early 1980's. It should also be noted that there are many persons eligible to teach who are not seeking teaching jobs and, thus, are not included in the estimate of the reserve pool. If conditions become more favorable for teaching, many of these persons might well decide to seek teaching positions. Thus, there exists the possibility for some expansion in the reserve pool.

16/ William S. Graybeal, Teacher Supply and Demand in Public Schools, 1976, National Education Association, Research Memo 1977-3, June 1977.

THE DEMAND FOR AND AVAILABILITY OF EDUCATIONAL ADMINISTRATORS

There were an estimated 12,000 qualified educational administrators hired in fall 1977.17/ About 6,400 (53 percent) of the administrators hired had not been employed as administrators during the previous year, which represents an indication of the demand for new administrators (table 6).

Principals and vice principals represent the largest group of newly hired administrators--7,200, or 56 percent of all administrators hired. Of these principals and vice principals, 54 percent were new as administrators (had not worked as educational administrators in 1976-77), 16 percent were from another administrative field, and 25 percent had served as principals or vice principals in another district. Superintendents and assistant superintendents were the next largest group--1,800, or 15 percent of all newly hired administrators. Of these, 39 percent had not worked as administrators in 1976-77, 36 percent were from another administrative specialty, and 25 percent had been superintendents or assistant superintendents in another district the previous year. Next in frequency were curriculum development administrators--1,000, or 8 percent of administrators hired.

As indicated above, the annual demand for new administrators was estimated to be approximately 6,400. It is difficult, however, to arrive at a figure for the supply of new administrators to relate to demand. In most cases education administrators come from the ranks of teachers. To establish the magnitude of the administrator supply, it would be necessary to determine how many teachers meet the certification requirement for becoming an administrator. This is complicated in that States differ in the criteria required for administrators, and the criteria differ from one type of administrative post to another. For almost all States a requirement for principals is at least a master's degree, and often additional course work is required. Data on numbers of teachers who meet the requirements for educational administrators, however, do not currently exist.

Although the supply of teachers eligible to be administrators is not known, it is clear in nearly all cases, when shortages of administrators by school district were examined, that school districts were able to find qualified candidates to fill position openings. Nationally, estimates indicate that only about 200 positions could not be filled with qualified persons. It is safe to conclude that there are no areas where shortages of educational administrators exist to any appreciable extent.

17/ Data from the LEA Survey of Teacher and Administrator Shortages, National Center for Education Statistics, Fall 1977.

FIELDS OF POTENTIAL DEMAND FOR TEACHERS IN RELATION TO EDUCATION DIVISION SUPPORTED TEACHER TRAINING PROGRAMS

Data of several types and from different sources have been examined in assessing teacher availability and demand. In this section the results of the studies will be examined together, and Education Division teacher training programs will be discussed in relation to these findings. Overall, the surveys indicated that a surplus of teachers existed for most fields and there were no fields where a clear-cut shortage of teachers existed. There are, however, some fields where the data indicated that a near shortage may have existed or that one might arise in the near future. Three criteria were used to identify such fields:

For a given field -

1. Did a high percentage of eligible graduates who applied get full-time teaching jobs the year following graduation? (For purposes of this study a high percentage is considered to be 80 percent.)

2. Was there a large number of district shortages (positions for which teachers were sought but not hired because qualified candidates were unavailable)? (A large number of such positions is considered to be 1,000 or more nationwide.)

3. Did a large number of school districts report the field as one for which demand is likely to emerge or grow over the next 5 years? (A large number of districts is considered to be 900 or more.)

The following are fields that fulfill one or more of the criteria: (See reference table 7 for the outcome for all fields.)

Field	Percent of graduates teaching full time	School district shortages (number of positions)	Number of districts with emerging or growing demand
Special education			
Learning disabled.....	(*)	1,500	1,200
Mentally retarded.....	80	500	200
Bilingual.....	(*)	1,200	300
Gifted and talented.....	(**)	300	900
Mathematics.....	50	1,100	700

* Sample not large enough for reliable estimate.

**Data not available.

NOTE: Figures meeting criteria defined in text are underlined.

Special education. Districts experienced the greatest shortage among teachers of the learning disabled, and the largest number of districts reported that demand will increase over the next 5 years. These data suggest that this field may actually be experiencing an overall shortage of teachers or that one may arise in the near future.

Although in 1975-76 teachers of the mentally retarded seemed to have been in relatively high demand (80 percent of graduates were hired as teachers full time), responses from school districts in fall 1977 indicate that there may now be an adequate supply of teachers in this area.

The studies conducted so far have not provided statistically reliable data for areas of special education such as visually handicapped and hearing impaired, where there are a considerably smaller number of teachers than in either of the two fields mentioned above.

The U.S. Office of Education (OE) has a group of programs, administered in the Bureau of Education for the Handicapped, involving the training of persons to teach handicapped pupils.18/ These are generally of two types: intensive degree-oriented programs and inservice training programs. Few new teachers are prepared in the degree programs; for the most part these programs provide graduate-level training for experienced teachers. Some retraining of teachers (preparation of teachers eligible in another field for qualification in special education) takes place in both the degree-oriented and the inservice programs, but data on the amount of retraining are not maintained by the Bureau.

18/ See appendix A for a more detailed description of Education Division programs funding teacher training.

Federal funds are appropriated specially for training teachers of learning disabled pupils, but the number actually being trained is not known. They represent some proportion of the 2,328 persons enrolled in 1977-78 who are receiving Federal funds for degree training in special education and the 1,588 proposed for Federal funding in 1978-79. If that proportion were as much as one-half, the numbers of teachers of the learning disabled being trained would only be 1,150 in 1977-78 and 800 in 1978-79. The numbers of newly qualified graduates would be much smaller in light of the fact that most training is provided for experienced teachers.

The Bureau of Education for the Handicapped maintains data on the number of teachers receiving federally funded degree training for severely handicapped and early childhood special education. About 1,900 persons are receiving degree training for teaching the severely handicapped in 1977-78 and a similar number is planned for in 1978-79. Although school districts have not indicated a high demand for teachers of the severely handicapped, the demand may increase considerably over the next few years under the impact of P.L. 94-142, which calls for providing an appropriate education for all handicapped pupils.

For early childhood education, a little more than 1,100 teachers for the handicapped are being prepared in 1977-78, and a similar number is planned for 1978-79, through Bureau programs. Data on early childhood special education were not obtained in the studies conducted so far but will be included in subsequent studies.

Inservice training for regular classroom teachers represents an increasingly large component of the special education teacher training program, indicating an adaptation to both the emergence of a general teacher surplus and the mainstreaming requirements of P.L. 94-142 (Education for All Handicapped Children Act).

Even though OE programs for training teachers in special education appear appropriate to the current situation, demand and availability data for special education teachers need to be regularly updated in light of full employment and potential shortages in selected areas of special education, particularly for teachers of the learning disabled.

Bilingual

On the LEA survey the shortage of bilingual education teachers was estimated to be 1,200. Only an estimated 300 districts considered bilingual education as a field where demand for teachers is likely to increase over the next five years. Another unit in NCES is specifically examining the issue of supply and demand for bilingual education teachers. This examination includes analysis of other data bases only now becoming available. A report on the results of the analysis will be prepared at a later date.

In relation to the possibility of increased demand for bilingual education teachers, mention needs to be made of the U.S. Supreme Court decision in the case of Lau vs. Nichols.19/ This decision held that it is a denial of equal educational opportunity if special programs are not provided to children with non- or limited-English-speaking ability. It can be expected that demand for bilingual education teachers will increase as a result of school district compliance with this decision.

The Office of Bilingual Education in OE administers an extensive program that provides funds for training teachers in bilingual education instruction. The current program data on individuals being trained are incomplete and do not include separate breakouts for numbers of inservice and preservice trainees. Therefore, although significant amounts of Federal funds are available for training bilingual education teachers, it is not possible at this time to estimate the contribution of these programs to the supply of newly qualified teachers.

Gifted and Talented. An estimated 900 districts expect the demand for teachers of the gifted and talented to grow over the next 5 years, although the estimated number of local shortages (400) is not particularly large. Careful attention needs to be given in subsequent studies to determine if demand in this area does increase.

OE's Office of the Gifted and Talented funds teacher training under two programs: 1) State Training Projects, and 2) Leadership Personnel Training. Most of the training being carried on is of an inservice nature and currently involves less than 3,000 individuals. However, the Office of Gifted and Talented estimates a need for a considerably larger number of qualified teachers to serve an estimated total of 2,560,000 gifted and talented children.

In view of the possible existing or emerging shortage of teachers of the gifted and talented, particularly if efforts to identify gifted and talented children are increased, trends in the demand for teachers and in the number of newly qualified teachers trained for this field will need to be monitored.

Mathematics. A shortage of more than 1,000 mathematics teachers in fall 1977 was estimated from the school districts' reports, and nearly 1,000 districts apparently considered this field as one where demand will increase over the next 5 years. This is in contrast to the fact that only 50 percent of newly eligible mathematics teachers were employed full time as teachers for the 1975-76 school year. Although not indicated by the 1975-76 data, mathematics has frequently been specified as an area where shortages or near shortages have existed in the years since 1970 when an overall teacher surplus has developed.

19/ Lau vs. Nichols, 414 U.S.563, 94 S.Ct. 786, 39 L.Ed. 2d 1(1974).

There is no Federal program dealing with the training of mathematics teachers. This is primarily because mathematics does not involve a specific pupil target group, and target groups have been the focus of OE support over the last several years since the advent of a teacher surplus.

Vocational education. In the LEA survey of teacher shortages conducted by NCES, local school districts estimated 300 shortages of vocational education teachers at the secondary school level; and 500 districts indicated that demand for secondary school vocational education teachers is likely to increase in the next 5 years. On the basis of these data, NCES does not conclude that vocational education teachers are in particularly short supply at this time, or for the foreseeable future. 20/

Two programs in OE's Bureau of Adult and Occupational Education currently provide support for vocational education teacher training. The Leadership Development Awards program funds a small number of individuals for advanced study in institutions of higher education. The State Systems program provides funds for training large numbers of teachers, mostly on an inservice basis. Both of these programs will terminate on or before September 30, 1978. At that time a new program, Graduate Leadership Development Awards will replace the Leadership Development Awards program. Training formerly under the State Systems program will be funded from State grant funds for vocational education and the discretionary funds available under federally funded Programs of National Significance.

General student loan programs. In addition to the programs just described, which provide support directly for teacher training, a number of large-scale student aid programs administered by the U.S. Office of Education (OE) provide financial assistance for college training to all eligible students, regardless of their major field of study. These are the Federal Work-Study Program, Basic Educational Opportunities Grant Program, Supplemental Educational Opportunities Grant Program, and National Direct Student Loan Program. OE also insures loans made by private lenders under the Guaranteed Student Loan Program. There is

20/ However, the reader should note that, in a recent survey conducted for the U.S. Office of Education (OE), 37 of the 56 State boards of vocational education reported about 5,700 shortages of vocational education teachers for 1977-78. This survey included teachers in area vocational education district schools and community colleges, as well as the regular secondary school teachers covered by the NCES studies. The difference in estimates of shortages may also be a function of the different reporting sources used, differing methodologies, or other factors not readily apparent. The interested reader is referred to OE's Bureau of Occupational and Adult Education, for further information about the OE survey of vocational education teacher shortages.

some concern that these large loan programs might be contributing to the existing teacher surplus by providing funding for significant numbers of students who are in training to be teachers. Unfortunately, data are not available on the numbers of individuals participating in these programs who are training to be teachers and expect to seek teaching jobs when graduated. It has been mentioned in an earlier section, however, that newly qualified teachers are at least as successful in job seeking as are bachelor's degree recipients in other fields, with the exception of engineering and the health professions. Therefore, Federal financial aid used by persons training to be teachers probably is not creating any more of a labor market problem then it does when used by persons training for most other fields that college graduates enter.

TEACHER AVAILABILITY AND DEMAND SURVEYS PLANNED FOR THE SPRING 1979 REPORT TO CONGRESS

Data for the current report to Congress were taken from surveys already in progress or conducted on a fast-response basis to meet the spring 1978 deadline. Consequently, definitive data are not available for many areas of teaching. Most of these gaps will be filled by studies to be conducted for the spring 1979 report. Two principal studies are planned. One is a second Survey of Recent College Graduates that is currently underway and will study the employment status of 1976-77 school-year graduates in spring 1978. This will provide more recent data for the spring 1979 report than the spring 1976 Recent College Graduate Survey did for the current report. Also, a larger number of graduates will be studied so that reliable estimates can be made for most teaching fields, including those serving severely handicapped, learning disabled, or bilingual pupils, as well as for vocational education fields, such as agriculture, distributive education, and health occupations.

A second survey will determine the number of graduates from teacher training institutions who are eligible to teach, by field. Data will be obtained for 1977-78 school year graduates, and estimates will be made for 1978-79 school year graduates. This survey will give supply data for spring 1978 graduates, and it will also give an estimate of teacher supply for 1 year in advance of that period. The latter is important for determining whether teacher supply will continue to decrease as it has since 1974, or whether it will level off or begin to increase in 1979 (see chart 3).

Thus, for the 1979 report, emphasis will be given to (1) estimating supply and demand more precisely by field and region, (2) to including fields not now fully covered (such as bilingual, severely handicapped, and early childhood special education), and (3) to obtaining current and advance estimates of the supply of newly qualified teachers.

REFERENCE TABLES

Table 1.--Bachelor's and master's degree recipients in 1974-75 who were eligible to teach for the first time, who applied to teach, and who had teaching jobs in spring 1976

Teaching status	Number	Percent	Detail percent
Total			
Eligible to teach.	261,000	100	-
Did not apply for teaching job . . .	60,000	23	-
Applied for teaching job	201,000	77	100
Teaching full time	109,000	42	54
Teaching part time	20,000	8	10
Not teaching	72,000	28	36
Bachelor's			
Eligible to teach.	227,000	100	-
Did not apply for teaching job . . .	49,000	22	-
Applied for teaching job	178,000	78	100
Teaching full time	93,000	41	53
Teaching part time	19,000	8	11
Not teaching	65,000	29	37
Master's			
Eligible to teach.	34,000	100	-
Did not apply for teaching job . . .	11,000	32	-
Applied for teaching job	23,000	68	100
Teaching full time	16,000	46	67
Teaching part time	1,000	3	4
Not teaching	7,000	19	28

SOURCE: Recent College Graduate Survey, National Center for Education Statistics. Survey conducted in spring 1976 of 1974-75 graduates.

Table 2.--Number of 1974-75 bachelor's degree recipients eligible to teach, who applied for a teaching job, and number teaching full time in spring 1976, by level and field

Level and field	Number of bachelor's recipients prepared to teach, who applied for a teaching job	Number teaching full time	Percent teaching full time
Total	177,700	93,400	53
Level 1/			
Elementary	69,700	40,800	59
Secondary	59,800	28,000	47
Elementary/secondary	37,600	20,400	55
Other	9,900	3,700	37
Field 2/			
General elementary	47,900	27,800	58
Art	5,900	1,900	32
English	6,500	3,000	46
Mathematics	4,900	2,400	50
Music	7,200	4,200	59
Physical education	7,000	4,400	62
Social science	10,000	3,600	36
Vocational education	9,000	5,700	64
Special education	16,400	11,500	70
Mentally retarded	6,000	4,800	80
Hearing and speech	5,700	3,500	61
All other special education	4,700	3,200	68

1/ Level figures do not sum to total because of small item nonresponse.
2/ Data on persons reporting eligibility in more than one field not included. Thus, field figures do not sum to total.

SOURCE: Recent College Graduate Survey, National Center for Education Statistics. Survey conducted in spring 1976 of 1974-75 graduates.

Table 3.--School districts with at least one position opening, with at least one shortage, and number of shortages, by field: Fall 1977

Level and field	Number of districts with at least one position opening		Number of districts with at least one shortage	Number of teacher shortages2/
	Number	Percent1/		
All districts	13,100	85	3,000	9,200
Level				
Elementary	11,200	76	1,600	3,700
Secondary	10,100	80	1,900	4,500
Elementary and secondary	2,200	-	200	1,000
Field				
Art	2,600	17	(*)	(*)
Bilingual education	800	5	100	1,200
Business	2,200	17	(*)	(*)
English language arts	6,000	39	200	200
Foreign languages	1,700	11	(*)	(*)
Gifted and talented	1,000	6	200	300
Health, phys. ed	4,500	29	100	200
Home economics (nonoccup.)	2,400	16	(*)	(*)
Industrial arts	2,600	21	200	300
Mathematics	4,600	30	600	1,100
Music	4,300	28	200	200
Nat. & Phys. sciences	3,300	22	200	400
Reading	2,900	19	300	400
Social studies	3,400	22	(*)	(*)
Vocational education	3,800	30	200	300
Math/science	700	6	100	100
English/soc. studies	600	5	(*)	(*)
Special education	7,000	46	1,500	3,200
Severely handicapped	700	4	200	200
Moderately and midly handicapped:				
Emotionally disturbed	1,500	10	200	300
Learning disabled	4,800	31	800	1,500
Mentally retarded	2,800	18	300	500
Speech impaired	2,600	17	400	600
Other	1,300	8	100	200

* Number greater than zero but less than 50.

1/ Percentages are based on the number of school districts containing a given grade level. For the total, percentages are based on 15,344 districts; for the elementary level, percentages are based on 14,830 districts; and for the secondary level, percentages are based on 12,635 districts. Percentages are not calculated for combined elementary/secondary because the number of districts in which elementary and secondary teaching assignments are combined is unknown. Vocational education, industrial arts, business, and home economics (nonoccup.) are percentaged on 12,635. All other fields are percentaged on 15,344.

2/ Shortages = Number of position openings for which teachers were sought but were unable to be hired because qualified candidates were unavailable.

SOURCE: LEA Survey of Teacher and Administrator Shortages, National Center for Education Statistics, fall 1977

Table 4.--Estimated number of school districts expecting demand for teachers to emerge or grow in their district in the next 5 years, by field: Fall 1977

Field	Number of districts
Art	400
Bilingual education	300
Business	(*)
English language arts	100
Foreign languages	(*)
Health, physical education	(*)
Home economics (non-occup.)	200
Industrial arts	800
Mathematics	700
Music	200
Natural & physical sciences	700
Reading	400
All vocational education	500
Agriculture	600
Distributive education	(*)
Health occupations	(*)
Occupational home economics	(*)
Office of occupations	(*)
Technical education	200
Trade and industry	100
Gifted & talented	900
All special education	600
Severely handicapped	300
Emotionally disturbed	300
Learning disabled	1,200
Mentally retarded	200
Speech impaired	200
Other special education	500

* Estimated number greater than zero, but less than 50.

SOURCE: LEA Survey of Teacher and Administrator Shortages, National Center for Education Statistics, fall 1977

Table 5.--Enrollment in regular elementary and secondary day schools, supply of newly qualified teachers, and demand for additional teachers: 1961 to 1986

Year	Total public and nonpublic enrollment, grades K-12, in regular day schools1/	Supply		Demand	
		Newly qualified teachers2/	Newly qualified teachers who applied for job3/	Total additional teachers4/	Newly qualified teachers5/
			(In thousands)		
1961	43,364	129	97	183	137
1962	44,849	142	107	193	145
1963	46,487	154	116	208	156
1964	47,716	174	131	213	160
1965	48,473	190	143	209	157
1966	49,239	199	149	228	171
1967	49,891	220	165	223	167
1968	50,744	233	175	243	182
1969	51,119	264	198	250	187
1970	51,309	284	213	221	164
1971	51,181	314	239	184	132
1972	50,744	317	244	182	127
1973	50,329	322	251	178	125
1974	50,053	305	241	170	119
1975	49,791	259	207	181	118
1976	49,335	227	182	146	102
	Projected			Projected (based on 6 percent turnover rate)	
1977	48,687	6/213	170	134	94
1978	47,840	-	-	128	90
1979	46,930	-	-	121	85
1980	46,094	-	-	117	82
1981	45,387	-	-	129	90
1982	44,809	-	-	135	95
1983	44,528	-	-	145	102
1984	44,546	-	-	167	117
1985	44,794	-	-	181	127
1986	45,244	-	-	188	132
				Projected (based on 8 percent turnover rate)	
1982	-	-	-	177	124
1983	-	-	-	186	130
1984	-	-	-	208	146
1985	-	-	-	223	156
1986	-	-	-	231	162

Footnotes on next page.

Footnotes for table 5:

1/ Data from Projections of Education Statistics to 1986-87, National Center for Education Statistics, forthcoming.
2/ 1961-72 figures from the National Education Association's Teacher Supply and Demand series. 1973-76 figures from the Survey of Preservice Preparation of Teachers, National Center for Education Statistics.
3/ Estimates based on data from the National Education Association and the Survey of Recent College Graduates, National Center for Education Statistics.
4/ Actual and projected figures from Projections of Education Statistics to 1986-87, National Center for Education Statistics, forthcoming.
5/ Estimates based on data from the National Education Association and the Survey of Recent College Graduates, National Center for Education Statistics.
6/ Actual figure from the National Education Association.

Table 6.--Number of education administrators hired and number of shortages of education administrators: Fall 1977

Administrators	Number of administrators hired, fall 1977								(Openings for which administrators were sought but not hired)
	Total		Not employed as school administrator in 1976-77		Employed as school administrator in 1976-77				
					In another specialty		In same specialty		
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Total	12,000	100	6,370	53	2,700	23	2,940	25	210
Superintendents and assistant superintendents	1,800	100	700	39	650	36	460	25	(1/)
Principals and vice principals	7,150	100	3,880	54	1,160	16	2,110	29	170
Staff relations (including collective bargaining)	180	100	80	47	90	48	10	6	(2/)
Curriculum development	990	100	500	51	400	41	80	8	10
Business and finance	480	100	330	70	60	13	80	17	(1/)
Others	1,410	100	870	61	340	24	200	15	40

1/ Number less than 5 but greater than zero.
2/ Number zero in sample.

NOTE--Numbers may not sum to total because of rounding.
SOURCE: LEA Survey of Teacher and Administrator Shortages, National Center for Education Statistics, fall 1977

Table 7.--Summary of data on teacher supply and demand, by level and field

Level and field	Percent of bachelor's recipients eligible to teach, teaching full time	Teacher shortages1/ reported by school districts	Districts reporting fields for which demand is likely to emerge or grow over the next 5 years
Total	53	9,200	-
Level			
Elementary	59	3,700	-
Secondary	47	4,500	-
Elementary and secondary	55	1,000	-
Field			
General elementary	58	300	-
Art	32	(3/)	400
Bilingual education	-	1,200	300
Business	(2/)	(3/)	(3/)
English language arts	46	200	100
Foreign languages	(2/)	(3/)	(3/)
Gifted and talented	-	300	900
Health, physical education	62	200	(3/)
Home economics (non-occup.)	-	(3/)	200
Industrial arts	-	300	800
Mathematics	50	1,100	700
Music	59	200	200
Natural & physical sciences	(2/)	400	700
Reading	(2/)	400	400
Social studies	36	(3/)	(3/)
Vocational education (any field)	64	300	-
Agriculture	(2/)	(3/)	600
Distributive education	(2/)	(3/)	(3/)
Health occupations	(2/)	(3/)	(3/)
Occupational home economics	(2/)	(3/)	(3/)
Office occupations	(2/)	(3/)	(3/)
Technical education	(2/)	(3/)	200
Trades and industry	-	100	100
Special education (any field)	70	3,200	-
Severely handicapped	-	200	300
Emotionally disturbed	(2/)	300	300
Learning disabled	(2/)	1,500	1,200
Mentally retarded	80	500	200
Speech impaired	-	600	200
Hearing and speech	61	-	-
Other special education	(2/)	200	500

1/ Shortages = Position openings for which teachers were sought but were unable to be hired because qualified candidates were unavailable.
2/ Percentage base from sample greater than zero, but less than 4,000.
3/ Number estimated from sample greater than zero, but less than 50.

- Data not available.

APPENDIXES

A. Education Division Programs that Fund Training for Teachers

B. Sample Design and Sampling Error for the Survey of Recent College Graduates and LEA Survey of Teacher and Administrator Shortages

APPENDIX A

Education Division Programs that Fund Training for Teachers

Additional detailed information on the Office of Education (OE) teacher training programs reviewed is provided in this appendix. Data in this section were used as the basis for the discussion in the previous section relating supply-demand data to the teacher training programs.

In addition to mandating a study of the demand for and availability of qualified teachers and administrators, the Education Amendments of 1976 directed NCES to "...assess the extent to which programs administered in the Education Division are helping to meet the needs identified as a result of such continuing survey."

This assessment was carried out for the purpose of obtaining data on individuals receiving teacher training on a preservice and/or inservice basis. All OE programs were reviewed and five were identified for study. These five programs included those for which funding levels were high enough to impact on the supply of new teachers and those funding training in special areas of education where personnel might currently, or in the near future, be in short supply. They are as follows:

1. Bilingual Education
2. Teacher Corps
3. Training Personnel for the Education for the Handicapped
4. Gifted and Talented
5. Vocational Education

For these programs, data were sought on numbers of individuals trained, type of training (inservice or preservice), type of degree granted, certificates of completion or teaching certificates awarded, and specialty areas in which training was provided.

Bilingual Education

Funds for training teachers for bilingual instruction are available from three programs within the Office of Bilingual Education. A fourth program, Fellowships for Preparation of Teacher Trainers, is only directly involved with influencing the number of new teachers and thus will not be considered.

Basic Programs is that part of the total Bilingual Education effort that provides funds for bilingual education of individuals with limited English-speaking ability. It receives 70 percent of the bilingual monies

appropriated. A minimum of 15 percent of these funds must be spent on training personnel preparing to participate or already participating in a project. A variety of training efforts are conducted, including workshops, seminars, college credit courses, and degree programs.

Training Resource Centers, a part of the Support Services Program, provide training to teachers, administrators, paraprofessionals, teacher aides, parents, and others who are or will be associated with a program of bilingual education. The 16 centers in this program provide inservice training and technical assistance to bilingual projects, both on-site and at the centers themselves.

Training Programs provide both preservice and inservice training for teachers and administrators. The preservice programs are primarily degree oriented and range from associate arts programs to Ph.D/Ed.D. programs. Inservice programs include short-term training institutes designed to improve the skills of participants in bilingual education programs.

Data were not available on numbers of individuals trained at the Training Resource Centers. Degrees awarded and separate breakouts for inservice and preservice trainees were not available for the other bilingual programs. The data (table A-1) indicate that large numbers of individuals are receiving training through these programs. "Basic Programs" appears to affect more than 35,000 individuals per academic year; "Training Programs," approximately 3,500 individuals per academic year. With the increased funding projected for all three programs, the numbers of individuals trained may increase significantly. However, even though funding levels are high for these programs and large numbers of individuals are receiving training, data are not available at this time on the number of newly qualified teachers prepared under the Bilingual Education program.

Teacher Corps

The Teacher Corps was originally established to increase opportunities for a quality education for low income populations by recruiting and training teacher interns to serve in schools that have concentrations of low income children. Each project funded had teams of interns (often as many as 40 or more) and experienced teachers who served as team leaders. Generally, these interns were at the graduate level. Most were not certificated, since they were drawn from non-education academic areas--primarily liberal arts. Of the small proportion who were certificated, practically none had prior teaching experience.

Participants on the projects funded during the program's first year of existence (1966) included 1,279 interns and 213 master teachers as team leaders. By 1975, the objectives of Teacher Corps had shifted from the production of new teachers to an emphasis on retraining and inservice training. Training figures for academic years 1975-76 through 1977-78, as shown in Table 2, reflect the new orientation. The number of preservice trainees (interns) dropped from 1,180 in the 1975-76 academic year to 560 for the 1977-78 academic year. The numbers of inservice trainees showed a minor fluctuation from the 1975-76 to the 1976-77 academic years and a major change for the 1977-78 academic year, when the projected number of inservice trainees jumped nearly fourfold to 19,340.

Table A-1. Bilingual education training programs

a. Numbers of individuals receiving training, by training program: Academic years 1975-76 to 1978-79

Training program	Academic year 1975-76	1976-77	1977-78	1978-79
Basic programs	4/ NA	1/ 35,000	2/ 36,000	3/ 38,000
Support services (Training resource centers)	4/ NA	4/ NA	4/ NA	4/ NA
Training programs	4/ NA	1/ 3,500	2/ 3,500	3/ 3,600

1/ Funded with FY '76 funds.
2/ Funded with FY '77 funds.
3/ Funded with FY '78 funds.
4/ Not available.

b. Funding level, by training program: Fiscal years 1976-79

(In thousands of dollars)

Training program	Fiscal year 1976	1977	1978	1979
Basic programs	$10,232	$11,425	$12,975	1/ NA
Support services (Training resource centers)	3,381	5,000	8,000	1/ NA
Training programs	9,275	9,275	11,000	$13,000

1/ Not available.

SOURCE: Office of Bilingual Education, U.S. Office of Education.

The recent shift in program emphasis is the result of major legislative amendments enacted by the Congress in 1974 and 1976. These amendments resulted in regulations published in February 1978 and the redirected program was effective in that year. The shift in program emphasis for Teacher Corps recognizes the potential of the use of training for all educational staff in schools serving low income populations for effecting school reform and, concomitantly, for reform of teacher education systems. The increase in in-service training in 1978 results from an increase in schools included at each project from one to an average of four or five.

Thus, Teacher Corps preservice programs initially contributed to the supply of new teachers in schools that were in the greatest need for high quality new teachers--those serving low-income and minority populations. With the new program, the number of new teacher-interns is typically in the 200-300 range each year.

Education for the Handicapped

Most of the training efforts in the Bureau of Education for the Handicapped are administered by the Division of Personnel Preparation under one program which includes: Preparation of Special Educators, Preparation of General Educators, and Instructional Models. Preparation of Special Educators primarily involves individuals who are certified or will be certified in special education. One program under "Preparation of Special Educators" is "Special Programs for Children with Specific Learning Disabilities." Part of that program involves provision of funds for personnel who are teaching or are preparing to be teachers of children with specific learning disabilities or are preparing to be supervisors and teachers of such personnel. This program was of special interest, since the LEA survey showed approximately 1,500 unfilled teaching jobs in this specialty area. The preparation of General Educators and Instructional Models programs primarily involve individuals who are certified or will be certified in non-Special Education areas but who will receive some training in Special Education. Table 3 presents the data on Preparation of Special Educators. 1/ Data were not available on the level of degree awarded.

Although there is legislative authority to fund training of special educators at both the undergraduate and graduate levels, very few students

1/ Not included are teachers trained for demonstration projects for the Handicapped Early Childhood and the Severely Handicapped Children and Youth programs. These are not administered in the Division of Personnel Preparation, BEH. The number of teachers trained for the latter program is given as 250 in the report of the Office of Education's National Teacher Development Initiative Task Force: Analysis of the U.S. Office of Education Discretionary Programs Having A Professional Development of Education Personnel Component. This source did not give the number of teachers trained for the Handicapped Early Childhood Education demonstration projects.

Table A-2. Teacher Corps training program

a. Numbers of individuals receiving training: Academic years 1975-76 to 1978-79

Type of Training	Academic year			
	1975-76	1976-77	1977-78	1978-79
Total	6,434	5,340	19,900	1/ NA
Inservice	5,254	4,842	19,340	1/ NA
Preservice	1,180	500	560	1/ NA

1/ Not available.

b. Funding level for fiscal years 1977-79 (In thousands of dollars)

Funding level	Fiscal year		
	1977	1978	1979
Total	$37,500	$37,500	$37,500

SOURCE: Teacher Corps, U.S. Office of Education.

Table A-3. Special education training programs

a. Numbers of individuals receiving training, by training specialty: Academic years 1975-76 to 1978-79

Training specialty	Academic year 1976-77 Total	1976-77 Inservice	1976-77 Preservice	1977-78 Total	1977-78 Inservice	1977-78 Preservice	1978-79 Total	1978-79 Inservice	1978-79 Preservice
Total	1/ 17,515	11,190	6,325	2/ 17,120	11,765	5,355	3/ 19,817	15,210	4,607
Early Childhood	4,260	2,860	1,400	4,501	3,366	1,135	5,313	4,147	1,166
Severely Handicapped	5,450	3,230	2,220	5,258	3,366	1,892	7,686	5,833	1,853
General Special Education	7,805	5,100	2,705	7,361	5,033	2,328	6,818	5,230	1,588

1/ Funded from FY '76 funds.
2/ Funded from FY '77 funds.
3/ Funded from FY '78 funds.

b. Funding level, by training specialty: Fiscal years 1976-78

(In thousands of dollars)

Training specialty	Fiscal year 1976 Total	1976 Inservice	1976 Preservice	1977 Total	1977 Inservice	1977 Preservice	1978 Total	1978 Inservice	1978 Preservice
Total	$27,645	$6,720	$20,925	$24,200	$7,060	$17,140	$23,871	$9,126	$14,745
Early Childhood	6,220	1,720	4,500	5,655	2,020	3,635	6,220	2,488	3,732
Severely Handicapped	9,440	1,940	7,500	8,075	2,020	6,055	9,431	3,500	5,931
General Special Education	11,985	3,060	8,925	10,470	3,020	7,450	8,220	3,138	5,082

SOURCE: Division of Personnel Preparation, Bureau of Education for the Handicapped, U.S. Office of Education.

are funded at the undergraduate level. Most undergraduates funded are in extremely specialized programs such as orientation and mobility training for the blind, or in geographic areas where the need for special education teachers is particularly acute. Of those funded for "preservice" training, most are already certificated and have prior teaching experience. The Bureau considers even those in graduate programs to be in a preservice status as long as they are receiving a stipend for at least a year, are in degree programs, and are enrolled at least three-fourths time. Thus, a graduate student on leave of absence from a teaching job would be considered as a preservice trainee if he or she met the criteria stated above.

In summary, training programs funded by the Bureau of Education for the Handicapped are producing only small numbers of newly qualified teachers. It is unlikely, therefore, that these programs contribute significantly to the existing oversupply of teachers. In fact, where a shortage may exist, such as that of teachers of children with learning disabilities, the Bureau may need to emphasize funding training of newly qualified teachers for that specialty area.

Program for the Gifted and Talented

OE's Program for the Gifted and Talented has provisions for training under two parts of its legislation: Part (d), which authorizes grants to State education agencies for training of persons engaged or preparing to be engaged as teachers or other educational personnel, or as supervisors in the education of the gifted and talented; and Part (e), which authorizes grants to institutions of higher education and other nonprofit agencies to provide training to leadership personnel for the education of the gifted and talented.

Most training conducted in the State training projects is in the form of inservice training through workshops, summer institutes, and part-time university courses. Inservice training is also carried on by the leadership training projects funded at Ventura, California (National Leadership Training Institute), and George Washington University, Washington, D.C., (Policy Fellows Program). (See table A-4.)

The only degree-oriented program supported by the gifted and talented program is funded through Teachers College, Columbia University, New York, N.Y., for a graduate Leadership Education Project. This program is carried out through a consortium of seven universities. Twenty-three graduate students are currently being supported. These students are working toward master's or doctoral degrees in gifted and talented education. Nearly all of these individuals have teaching experience. Upon completion of their training, they may teach, supervise teachers, or become administrators; some may become teacher trainers.

Since most of the training programs presently funded by the Office of Gifted and Talented are of the inservice variety, they would have limited impact on the supply of newly qualified teachers for the gifted and talented. In fact, given the possible shortage of some 400 teachers of the gifted and

Table A-4. Gifted and talented training programs

a. Numbers of individuals receiving training, by training program: Academic years 1976-77 and 1977-78

Training program	Academic year 1976-77	1977-78
State training projects	1/ NA	17,000 (est.)
National Leadership Training Institute	1,000 (est.)	5,000 (est.)
Columbia Teacher College Consortium	2/ 8	3/ 23
George Washington University Policy Fellows Program	2/ 24	3/ 5

1/ Not available.
2/ Funded with FY '76 funds.
3/ Funded with FY '77 funds.

b. Funding level, by training program: Fiscal years 1976 and 1977

(In thousands of dollars)

Training program	Fiscal year 1976	1977
State training projects	$1,500	$1,500
National Leadership Training Institute	165	190
Columbia Teachers College Consortium	190	165
George Washington University Policy Fellows Program	89	76

SOURCE: Gifted and talented education staff, Bureau of Education for the Handicapped, U.S. Office of Education.

talented, as indicated in the LEA survey mentioned previously, there may be a need to fund more individuals who will become qualified to teach in this specialty area.

Vocational Education

In fiscal years 1976 and 1977, the two principal programs administered by the Bureau of Occupational and Adult Education that included training efforts were Leadership Development Awards and State Systems programs.

Leadership Development Awards were made to qualified vocational education personnel for advanced study in an approved vocational education leadership development program of an institution of higher education. Awards were made to 242 individuals in the 1976-77 academic year and to 239 individuals in the 1977-78 academic year.

Under the State Systems program, funds were made available to State boards for vocational education to pay the costs of cooperative arrangements for training or retraining vocational education personnel. These efforts primarily focused on preservice or inservice training designed to meet specific personnel development needs at State, regional, and national levels. This program affected large numbers of individuals; approximately 70,000 received training under this program in the 1976-77 academic year, and about 68,000 received training in the 1977-78 academic year (table A-5).

Training under both the Leadership Development Awards and State Systems programs will terminate on or before September 30, 1978.

A revised leadership development program and a new fellowship program have been funded, beginning fiscal year 1978. The revised program, titled Graduate Leadership Development Awards, is quite similar to the Leadership Development Awards program described above. Most of the estimated 155 individuals who will receive awards under this program for the 1978-79 academic year will have had teaching experience in vocational education. Some may return to teaching upon completion of their graduate programs; others may become supervisors, administrators, or teacher trainers. The new Vocational Education Certification Fellowship Program is concerned with recertifying unemployed teachers and with certifying employees of business, industry, or agriculture in vocational instructional areas in which there are shortages. This program's current projection is for 188 awards for the 1978-79 academic year. Thus, most of the individuals funded by these two programs are experienced teachers and do not add to the existing supply of teachers. Those who receive retraining that will allow them to enter other fields within vocational education where there may be shortages of teachers will not add to the existing supply.

Although Federal discretionary funds will no longer be allocated for the State Systems program, both the State grant funds for vocational education and the discretionary funds available under federally funded Programs of National Significance can be used to pay the training costs of all of the elements

formerly supported under the State Systems program. Information on the use of State grant funds for vocational education personnel development will not be available until the required 1978 State accountability reports are reviewed.

Table A-5. Vocational education training programs

a. Numbers of individuals receiving training, by training program: Academic years 1976-77 to 1978-79

Training program	Academic year 1976-77	1977-78	1978-79
Leadership Development Awards	1/ 242	2/ 239	-
State Systems	1/ 70,000	2/ 68,000	-
Graduate Leadership Development Awards	-	-	3/ 155
Vocational Education Certification Fellowship	-	-	3/ 188

1/ Funded with FY '76 funds.
2/ Funded with FY '77 funds.
3/ Funded with FY '78 funds.

b. Funding level, by training program: Fiscal years 1976-79

(In thousands of dollars)

Training program	Fiscal year 1976	1977	1978	1979
Leadership Development Awards	$2,400	$2,400	-	-
State Systems	7,600	7,600	-	-
Graduate Leadership Development Awards	-	-	$1,758	$1,758
Vocational Education Certification Fellowship	-	-	1,850	1,850

SOURCE: Bureau of Occupational and Adult Education, U.S. Office of Education.

APPENDIX B

SAMPLE DESIGN AND SAMPLING ERROR FOR THE SURVEY OF RECENT COLLEGE GRADUATES AND LEA SURVEY OF TEACHER AND ADMINISTRATOR SHORTAGES

Recent College Graduate Survey

Sample design. A two-stage sample was developed to obtain the data used in this report. For the first stage, a sample of 209 schools was selected from all colleges and universities offering a bachelor's or master's degree. The universe of schools was stratified by percent of graduates in the school with degrees in education, publicly or privately operated, whether or not the school was on a list of schools emphasizing special education, and the 10 geographic regions of the Department of Health, Education, and Welfare. A measure of size was assigned to each school depending upon its total number of graduates as well as the proportion of graduates in education. A systematic sample of schools was then selected with probability proportionate to size.

In the second stage, a listing of graduates with bachelor's and master's degrees was obtained from the selected schools. The graduates were stratified by level of degree, and by special education graduates, other education graduates, and other graduates. The sampling rates within the schools were established in such a way as to produce the same overall probabilities of selection for all bachelor's degree graduates in each of the three strata and uniform probabilities within each class for the master's degree graduates. The sample of students was selected through the use of systematic sampling; that is, by selecting every n-th case with a random start.

Two hundred of the 209 schools in the sample responded (a 96 percent response rate) and 4,350 graduates of the 5,506 in the sample (79 percent) responded.

A ratio-estimation procedure was used to inflate the sample results to estimates applicable to the total number of graduates in 1974-75 as reported in the Higher Education General Information Survey (conducted by NCES). This procedure includes the assumption that the nonrespondents had the same characteristics as the respondents.

Reliability of the estimates. Since the estimates in this report are based on a sample, they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same questionnaires. There are two types of errors possible in an estimate based on a

sample survey--sampling and nonsampling. For estimates in this report, indications of the magnitude of sampling error are provided on pp. 67 and 68 of this appendix. The extent of nonsampling error--systematic error or bias in the data--is unknown. Consequently, particular care should be exercised in the interpretation of figures based on a relatively small number of cases or on small differences between estimates.

Sampling variability. The sampling error is a measure of sampling variability, such that chances are about 2 in 3 that an estimate from the sample would differ from the result of a survey of all graduates, using the same procedures, by less than the sampling error. The coefficient of variation is the sampling error divided by the estimate. Coefficients of variation and standard errors for reference tables 1 and 2 of the report are presented in tables B-1 and B-2 of this appendix.

LEA Survey of Teacher and Administrator Shortages for the 1977-78 School Year

Sample design. For this study, conducted through the Fast Response Survey System, a national sample of 600 local education agencies (LEA's) was drawn with probability proportional to size from the universe of approximately 15,000 public school districts in the United States. The universe of LEA's was stratified by enrollment size and the Orshansky Poverty Index prior to sample selection.

The sample was reduced to 564 school districts after correcting for school district mergers, closings, and refusals to participate in this survey. On receipt of 90 percent of the questionnaires (507), the data collection was halted.

A weight adjustment was made to account for survey nonresponse. The weight adjustment was calculated for each cell of a two-way tabulation of responses. This tabulation made use of the enrollment size and the Orshansky Poverty Index classification of each school district. The resulting weighted survey responses represent the 15,344 school districts in the United States.

Sampling variability. Coefficients of variation for estimates of number of teacher shortages and for selected fields for number of school districts for which demand for teachers is likely to emerge or grow in the next 5 years are presented in appendix tables B-3 and B-4, respectively.

Table B-1.--Bachelor's and master's degree recipients in 1974-75 who were eligible to teach for the first time, who applied to teach, and who had teaching jobs in spring 1976, with coefficients of variation and standard errors

Teaching status	Number	Coefficient of variation	Standard error	Percent	Standard error	Detailed percent	Standard error
Eligible to teach.	261,000	.025	6400	100	-	-	-
Did not apply for teaching job.	60,000	.067	4000	23	2	-	-
Applied for teaching job. . . .	201,000	.029	5900	77	3	100	-
Teaching full time.	109,000	.040	4400	42	2	54	3
Teaching part time.	20,000	.068	2300	8	1	10	1
Not teaching.	72,000	.060	4300	28	2	36	2
Bachelor's							
Eligible to teach.	227,000	.023	5400	100	-	-	-
Did not apply for teaching job.	49,000	.071	3500	22	2	-	-
Applied for teaching job. . . .	178,000	.029	5100	78	3	100	-
Teaching full time.	93,000	.040	3700	41	2	53	3
Teaching part time.	19,000	.116	2200	8	1	11	1
Not teaching.	65,000	.062	4000	29	2	37	3
Master's							
Eligible to teach.	34,000	.100	3400	100	-	-	-
Did not apply for teaching job.	11,000	.182	2000	32	7	-	-
Applied for teaching job. . . .	23,000	.126	2900	68	11	100	-
Teaching full time.	16,000	.150	2400	46	8	67	13
Teaching part time.	1,000	.500	500	3	2	4	2
Not teaching.	7,000	.243	1700	19	5	28	8

SOURCE: Recent College Graduate Survey, National Center for Education Statistics. Survey conducted spring 1976 of 1974-75 graduates.

Table B-2.—Number of 1974-75 bachelors recipients eligible to teach who applied for a teaching job, and number teaching full time in spring 1976, by level and field, with coefficients of variation and standard errors

Level and field	Number of bachelor recipients prepared to teach who applied for teaching jobs	Coefficient of variation1/	Standard error1/	Number teaching full time	Coefficient of variation1/	Standard error1/	Percent teaching full time	Standard error1/
Total	177,700	.029	5200	93,400	.046	4300	53	3%
Level 2/								
Elementary	69,700	.041	2900	40,800	.060	2500	59	4
Secondary	59,800	.102	6100	28,000	.151	4200	47	9
Elementary/ secondary	37,600	.104	3900	20,400	.142	2900	55	10
Other	9,900	.202	2000	3,700	.351	1300	37	15
Field 3/								
General elementary	47,900	.054	2600	27,800	.075	2100	58	5
Art	5,900	.319	1900	1,900	.640	1200	32	23
English	6,500	.300	2000	3,000	.452	1400	46	25
Mathematics	4,900	.369	1800	2,400	.522	1300	50	32
Music	7,200	.300	2200	4,200	.369	1500	59	28
Physical education	7,000	.300	2100	4,400	.369	1600	62	30
Social science	10,000	.260	2600	3,600	.405	1500	36	17
Vocational education	9,000	.268	2400	5,700	.319	1800	64	27
Special education	16,400	.020	300	11,500	.047	500	75	6
Mental retardation	6,000	.084	500	4,800	.101	500	80	10
Speech and hearing	5,700	.090	500	3,500	.128	500	61	8
Other special education	4,700	.104	500	3,200	.132	400	68	11

1/ Education majors, most of whom are the potential elementary school teachers, were oversampled. Within the field of education, special education majors were oversampled. Thus, standard errors are relatively small for elementary school teachers and even smaller for special education teachers.

2/ Level figures do not sum to total because of small item nonresponse.

3/ Data on persons reporting eligibility in more than one field not included. Thus field detail does not sum to total.

SOURCE: Recent College Graduate Survey, National Center for Education Statistics. Survey conducted spring 1976 of 1974-75 graduates.

Table B-3.--Number of teacher shortages for school districts and coefficients of variation, by field: Fall 1974

Level and field	Number of local teacher shortages (Positions)	Coefficient of variation
All districts	9,200	.17
Level		
Elementary	3,700	.18
Secondary	4,500	.16
Elementary and secondary	1,000	.62
Field		
Art	(*)	--
Bilingual education	1,200	.49
Business	(*)	--
English language arts	200	.16
Foreign languages	(*)	--
Gifted and talented	400	.71
Health, phys. ed	200	.72
Home economics (non-occup.)	(*)	--
Industrial arts	300	.43
Mathematics	1,100	.30
Music	200	.74
Nat. & phys. sciences	400	.23
Reading	300	.44
Social studies	(*)	--
Vocational education	300	.35
Math/science	100	.39
English/soc. studies	(*)	--
Special education	3,200	.19
Severely handicapped	200	.56
Moderately and mildly handicapped:		
Emotionally disturbed	300	.22
Learning disabled	1,500	.31
Mentally retarded	500	.37
Speech impaired	600	.33
Other	300	.31

*Estimated number greater than zero but less than 50.

Table B-4.--School districts reporting fields (at any level) for which demand for teachers is likely to emerge or grow in their district in the next 5 years, with coefficients of variation: Fall 1977

Field	Number of districts	Coefficient of variation
Industrial arts	800	.33
Mathematics	900	.41
Natural & physical sciences	700	.45
Agriculture	600	.40
Gifted and talented	1,000	.33
Learning disabled	1,200	.26
Any special education	2,753	.14
Any vocational education	1,493	.18

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